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EXAMINER

XU, KEVIN K

ART UNIT

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Please find below and/or attached an Office communication concerning this application or proceeding.



## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4, 6-10, 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Ulichney. (5920322)

Regarding claim 1, Ulichney teaches identifying a first color space format. (Col 2 lines 3-8, Col 6 lines 1-9) It should be noted that the first color space format as taught by Ulichney is YUV. Furthermore, Ulichney teaches selecting both an offset parameter and a scale parameter associated with the first color space format. (Col 17 lines 1-67, Col 18 lines 45-59, Figs 32, 33A, 34 and 35) It should be noted that the scale parameter as taught by Ulichney is a slope/steepness variable. Additionally Ulichney teaches identifying a conversion matrix configured to convert values associated with the first color space format to a second color space format. (Col 7, lines 1-14 Fig. 32) It should be noted that the color transform (matrix) as taught by Ulichney is employed by the color conversion system (Fig. 32) and the second color space format as taught by Ulichney is RGB. Lastly, Ulichney teaches determining when to apply the offset parameter and the scale parameter in relation to application of the conversion matrix. (Col 17 lines 1-67, Col 18 lines 45-59, Figs 32, 33A, 34 and 35) It should be noted that Ulichney teaches determining when to apply the offset parameter and the scale

parameter in relation to application of the conversion matrix prior to application of the conversion matrix for input YUV values. (Col 17 lines 13-31, Fig. 32)

Claim 9 is similar in scope to claim 1 except for the recitation of program instructions. Ulichney also teaches this. (Col 17, lines 23-31) Therefore, claim 9 is rejected under similar rationale as claim 1.

Consider claims 2 and 10, Ulichney teaches identifying the first color space format as a YUV based color format and the second color space format as an RGB based color format. (Col 2 lines 3-8, Col 6 lines 1-9) Additionally Ulichney teaches applying the offset parameter and the scale parameter prior to application of the conversion matrix. (Col 17 lines 1-67, Col 18 lines 45-59, Figs 32, 33A, 34 and 35)

Consider claim 4, Ulichney teaches manipulating a color balance characteristic associated with the RGB based color format. (Col 17 lines 1-12, Col 17 lines 61-66) Furthermore Ulichney teaches outputting data associated with the RGB based color format. (Fig. 32)

Regarding claims 6 and 12, Ulichney teaches adjusting brightness characteristic through a value associated with the offset parameter. (Col 17 lines 5-9)

Regarding claims 7 and 13, Ulichney teaches adjusting color balance through a value associated with the offset parameter. (Col 17 lines 5-9, Col 17 lines 61-66)

Consider claims 8 and 14, Ulichney teaches adjusting a contrast characteristic through a value associated with the scale parameter. (Col 17 lines 5-9, Col 17 lines 42-60)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 5, 11, 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ulichney (5920322) in view of Roever. (20030007686)

Regarding claim 3, Ulichney does not explicitly teach identifying the first color space format as an RGB based color format and the second color format as a YUV based color format. This is what Roever teaches (p. 1-2 paragraph 13). It would have been obvious to one ordinary skill in the art at the present time the invention was made to combine the teachings of RGB to YUV color space conversion as taught by Roever into the system of Ulichney because YUV color space monitors human perception of color more closely than RGB for television broadcast. Furthermore, Roever teaches applying the offset parameter and scale parameter after the application of the conversion matrix. (Fig. 1, p. 2 paragraph 24 paragraph 25, p. 3 paragraph 30 paragraph 32) It should be noted that the scaler provides both scaling (multiply) and offsetting (add). (p. 2 paragraph 24) It would have been obvious to one ordinary skill in the art at the present time the invention was made to combine the teachings of applying offset parameter and scale parameter after application of the conversion matrix as

Art Unit: 2628

taught by Roever into the system of Ulichney because the scaler after color space conversion provides the functionality of optional scaling and offsetting (multiply-add) of the image (p. 2 paragraph 24) and thus, a better final color representation can be achieved.

Claim 11 is similar in scope to claim 3 and thus, rejected under similar rationale.

Consider claim 5, Ulichney teaches defining an other offset parameter. (Col 17, lines 1-12) It should be noted the other offset parameter as taught by Ulichney is brightness. However Ulichney does not explicitly teach applying the other offset parameter after the application of the conversion matrix to the values. This is what Roever teaches. (Fig. 1, p. 2 paragraph 24 paragraph 25, p. 3 paragraph 30 paragraph 32) It would have been obvious to one ordinary skill in the art at the present time the invention was made to combine the teachings of applying offset parameter after application of the conversion matrix in order to apply the other offset parameter because the scaler after color space conversion provides the functionality of optional scaling and offsetting (multiply-add) of the image (p. 2 paragraph 24) and thus, a better final color representation can be achieved.

Consider claim 15, Ulichney teaches an input port configured to receive video data from an external device. (Col 5 lines 24-38 and Fig. 2) Furthermore Ulichney teaches a programmable register block configured to store color space conversion factors. (Col 6 lines 41-49, Fig. 3A, Col 8 line 62- Col 9 line 47, Figs 9A and 9B) Furthermore Ulichney teaches a color space conversion block configured to convert video data between color space formats, the color space conversion block capable of

Art Unit: 2628

applying color space conversion factors to one of an input to the color space conversion block, the application of color space conversion factors based upon a type of color format associated with the received video data (Col 2 lines 3-8, Col 6 lines 1-9, Col 7 lines 1-14, Fig. 32). It should be noted that the color space conversion block as taught by Ulichney is the color conversion system with color adjustment system. (Fig. 32) However Ulichney fails to explicitly teach applying color space conversion factors to an output from the color space conversion block. This is what Roever teaches. (p. 1-2 paragraph 13, Fig. 1, p. 2 paragraph 24 paragraph 25, p. 3 paragraph 30 paragraph 32) It would have been obvious to one of ordinary skill in the art at the present time the invention was made to combine the teachings of applying color space conversion factors to an output from color space conversion block into the system of Ulichney because the scaler after color space conversion provides the functionality of optional scaling and offsetting (multiply-add) of the image (p. 2 paragraph 24) and thus, a better final color representation can be achieved.

Consider claim 16, Ulichney teaches a memory region configured to store the converted video data. (Col 2, lines 1-8)

Consider claim 17, neither Ulichney nor Roever explicitly teaches the programmable register block includes twenty-one registers. However, it would have been obvious to one of ordinary skill in the art at the present time the invention was made to utilize 21 registers in the system of Ulichney because utilizing 21 registers allows each conversion factor to be stored in an individual register and thus, provides quicker access to each individual register without multiplexing a large number of

Art Unit: 2628

variables onto a small number of registers (register reallocation) and thus, a decrease in processing time can be achieved.

Regarding claim 18, neither Ulichney nor Roever explicitly teaches nine registers of the twenty-one registers are configured to store conversion coefficients configured to convert the video data from a first color space format to a second color space format. However, it would have been obvious to one of ordinary skill in the art at the present time the invention was made to utilize 9 registers out of 21 in the system of Ulichney in order to store conversion coefficients because utilizing 9 out of 21 allows each conversion coefficient factor to be stored in an individual register and thus, provides quicker access to each individual register without multiplexing a large number of variables onto a small number of registers (register reallocation) and thus, a decrease in processing time can be achieved.

Consider claim 19, neither Ulichney nor Roever explicitly teaches a remainder of the twenty one registers are configured to store data selected from a group consisting of input offset values, output offset values, input scale values, and output scale values. It should be noted that each group consists of 3 values (each with matrix dimensions of 3 by 1). It would have been obvious to one of ordinary skill in the art at the present time the invention was made to utilize a remainder of the twenty one registers as configured to store data of input offset values, output offset values, input scale values and output scale values in the system of Ulichney because utilizing the remaining 12 registers allows each conversion scale and offset values for input and output to be stored in an individual register and thus, provides quicker access to each individual register without



Art Unit: 2628

multiplexing a large number of variables onto a small number of registers (register reallocation) and thus, a decrease in processing time can be achieved

Consider claim 20, Ulichney teaches color format is a YUV based color format; the color space conversion block applies the color space conversion factors to the input. (Col 17 lines 1-67, Col 18 lines 45-59, Figs 32, 33A, 34 and 35)

Consider claim 21, Ulichney teaches color space conversion block to independently apply a scale parameter and offset parameter to the input. (Col 17 lines 1-67, Col 18 lines 45-59, Figs 32, 33A, 34 and 35)

Claims 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ulichney (5920322).

Regarding claim 22, Ulichney teaches storing color space factors including matrix conversion factors, scaling factors and offset factors. (Col 17 lines 1-67, Col 18 lines 45-59, Figs 32, 33A, 34, 35, Col 7, lines 1-14 Fig. 32) Furthermore Ulichney teaches receiving video input data associated with a first color space format. (Col 5 lines 25-38 and Fig. 32) Additionally Ulichney teaches selecting color space conversion factors to received input data, conversion factors including adjusting contrast characteristic of video input data, adjusting brightness characteristic of video input data and applying a conversion matrix to conversion matrix to convert the input video data to a second color space format, the conversion to the input data occurring after one of the contrast characteristic and brightness characteristic has been adjusted. (Col 17 lines 1-67, Col 18 lines 45-59, Figs 32, 33A, 34, 35, Col 7, lines 1-14 Fig. 32) However Ulichney does

Art Unit: 2628

not explicitly teach circuitry. Examiner takes official notice of the utilization of circuitry is well known in the art. It would have been obvious to one of ordinary skill in the art at the present time the invention was made to utilize circuitry in order to store, apply, receive as well as adjust color space conversion factors because standardized integrated circuits offer high performance since its small size allows low power logic to be used at fast switching speeds, and thus more efficient performance is achieved.

Consider claim 23, Ulichney teaches adjusting color balance characteristic associated with the second color space format. (Col 17 lines 1-9 and Col 17 lines 61-67)

Consider claim 24, Ulichney teaches a handheld electronic device (camera). (Col 5, lines 27-32) However Ulichney does not explicitly teach said handheld electronic device having a LCD display. Examiner takes official notice that handheld electronic devices can have LCD displays. It would have been obvious to one of ordinary skill in the art at the present time the invention was made to utilize LCD displays in hand held devices because LCD displays use small amounts of electric power and is therefore, suitable for use in battery-powered electronic devices.

Claim 25 is a combination of claims 16, 17 and 18 and thus rejected under similar rationale.

Regarding claim 26, Ulichney fails to explicitly teach a multiplier. Examiner takes official notice of the utilization of multipliers is known in the art. It would have been obvious to one of ordinary skill in the art at the present time the invention was made to utilize multipliers in order to adjust the contrast characteristic of video input data

Art Unit: 2628

because multipliers include attenuators or amplifiers on the inputs or outputs to provide the functionality of allowing the signal to be scaled within voltage limits of the circuit.

Regarding claim 27, Ulichney fails to explicitly teach an adder. Examiner takes official notice of the utilization of adders is known in the art. It would have been obvious to one of ordinary skill in the art at the present time the invention was made to utilize adders in order to adjust brightness characteristic of the video input data because adders provide the functionality of performing addition as well as trivially modified to perform subtraction.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from examiner should be directed to Kevin K Xu whose telephone number is 571-272-7747. The examiner can normally be reached on Monday-Friday from 9 AM – 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman can be reached on (571)-272-7653.

Information regarding the status of an application may be obtained from Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

Art Unit: 2628

more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EB) at 866-217-9197 (toll-free).

KX

Kevin Xu

4/5/2006

A handwritten signature in black ink, appearing to read "Mark Zimmerman", with a long horizontal flourish extending to the right.

**MARK ZIMMERMAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600**